

BIN'KOVSKIY, P.O. [Byn'kivs'kyi, P.O.]

Improving seeding apparatus. Mekh. sil'. hosp. 12 no. 3:14-15 Mr '61.  
(MIRA 14:4)

1. Yakimovskaya opytnaya stantsiya Ukrainского nauchno-issledovatel'skogo instituta mekhanizatsii i elektrifikatsii sel'skogo khozyaystva.

(Planters (Agricultural machinery))

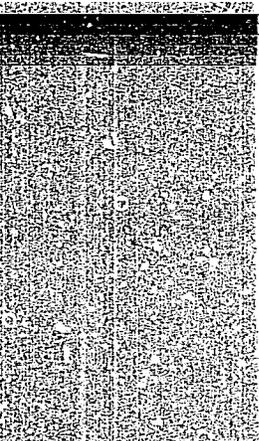
BIN'KOVSKIY, Yu.A.; NEMETS, O.F.; STEPANENKO, V.A.

Vacuum deposition of films without base layers. Prib.i tekhn. eksp.  
6 no.5:190 S-0 '61. (MIRA 14:10)

Le Institut fiziki AN USSR.  
(Metallic films)

**"APPROVED FOR RELEASE: 06/08/2000**

**CIA-RDP86-00513R000205320010-8**



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**CIA-RDP86-00513R000205320010-8"**

HLESADDA BINKOWNA

Distr: 4E2c 2/

Inactive bivalent iron. Alfons Krause and Aleksandra Binkówna (Univ. Poznań, Poland). *Rocznik Chem.* 32, 1035-37 (1958) (German summary).— Artificial magnetite, in spite of its content of Fe<sup>2+</sup>, can be inactive in oxidation-reduction systems. The electronic transfer necessary for a catalytic reaction can be induced only after adding suitable ions, such as Cu<sup>2+</sup>: Fe<sup>2+</sup> + Cu<sup>2+</sup> + Fe<sup>3+</sup> → Fe<sup>3+</sup> + Cu<sup>+</sup> + Fe<sup>3+</sup>, etc. The inducing effect was noted even at a diln. of 1:10 million. A. Kreglewski

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1 5  
 Oxidation-reduction catalysis in magnetic field. Alfons Kratoch and Aleksandra Blakówna (Univ. Poznań, Poland). Roczniki Chem. 33, 848-7 (1959) (German summary).— The catalytic oxidation of HCOOH by means of 1.2% soln. of H<sub>2</sub>O<sub>2</sub> at 37° was studied in the presence of (I) artificial magnetite (the ratio FeO:Fe<sub>2</sub>O<sub>3</sub> = 1: 1.35), (II) Cu<sup>++</sup> ions, and (III) I activated by means of II. III accelerates the reaction considerably more than does I or II. Studies under identical conditions but in the presence of a magnetic field (150 Oe.) showed that the latter has no effect on the activity of I or II but inhibits that of III. This is due to the decrease of surface and of the no. of active centers on I, which, within limits of exptl. error, does not change the weak activity of I but changes the high one of III. In fact, it was proved that the degree of adsorption of II on I decreases in a magnetic field. A. Kryglewski

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BINKOWNA, ALEXANDRA

1  
~~The catalytic properties of natural magnetite. Alfons Krause and Aleksandra Binkówna (Univ. Poznań, Poland). Roczniki Chem. 33, 819-21(1959)(German summary); cf. C.A. 53, 19542f.—Natural magnetite, applied as a fine powder, was inactive in the reaction of  $H_2O_2$  decompn. and oxidn. of HCOOH by means of  $H_2O_2$  at 37°. However, the lack of active centers is incomplete, because the catalyst can be activated with  $Co^{++}$  or  $Cu^{++}$ . A neg. influence of magnetic field was found for the catalytic action in the system  $H_2O_2$ -HCOOH. A. Kreglewski~~

4  
(1959-1/13)

Card 1/1

aht

**BINKOWSKA-FELLMANN, Krystyna; MEJER, Jera**

Case of double stomach in an 8-month-old infant. *Pediat.*  
*polska* 31 no.6:686-688 June 56.

1. Z Kliniki Chorob Dzieciacych A.M. w Poznaniu, Kierownik:  
prof. dr. med. K. Jonscher, Poznan, ul. Magdaleny 14.  
(STOMACH, abnormalities,  
duplication (Pol))

**BINKOWSKA-FELLMAN, Krystyna; TASZYCKA, Krystyna**

Factors favoring the appearance of acute digestive tract disorders in newborn. Polski tygod. lek. 13 no.43:1678-1679 27 Oct 58.

1. Z II Kliniki Chorob Dziecięcych Akademii Medycznej w Poznaniu; Kierownik: doc. dr med. O. Szczępki i z Wojewodzkiego Specjalistycznego Szpitala Dziecięcego w Poznaniu; Dyrektor: dr med. M. Stabrowski. Adres: Poznan, ul. Sw. Josefa 7/8.

(INFANT, NEWBORN, dis.

gastrointestinal disord., acute, etiol. (Pol))

(GASTROINTESTINAL DISEASES, in inf. & child

acute, in newborn, etiol. (Pol))

WALCZAK, M.; TASZYCKA, K.; BINKOWSKA-FELLMANN, K.; RUCKA, A.

Behavior of hypothalamic neurosections in water metabolism disorders in infants. *Pediat. pol.* 36 no.6:627-632 '61.

II Kliniki Chorob Dzieci AM w Poznaniu Kierownik: doc. dr med. O. Szcypki i z Wojewodz. Specjalist. Szpitala Dzieciego w Poznaniu  
Dyrektor: dr med. M. Stabrowski  
(HYPOTHALAMUS pathol) (INFANT NUTRITION DISORDERS pathol)

WALCZAK, Mieczyslaw; TASZYCKA, Krystyna; BINKOWSKA-FELLMAN, Krystyna

Role of the neurosecretory system in water metabolism in newborn and older infants. Endokr. pol. 13 no.5:533-542 '62.

1. II Klinika Chorob Dzieciacych AM w Poznaniu. Kierownik: prof. dr O. Szczepski. Zaklad Histologii Prawidlowej i Embriologii AM w Poznaniu. Kierownik: prof. dr K. Mietkiewski.

(WATER ELECTROLYTE BALANCE) (PITUITARY GLAND POSTERIOR)  
(HYPOTHALAMUS) (INFANT NEWBORN)

BINKOWSKI, Wladyslaw, mgr inż., adiunkt

Influence of the dead weight of the crane bridge on  
the total weight of the overhead crane. Przegl mech  
22 no.6:179-181 25 Mr '63.

1. Wydział Mechaniczny, Politechnika Śląska, Gliwice.

BINKOWSKI, Władysław, mgr inż., adiunkt

Possibilities of economizing steel in the construction of cranes. Przegł mech 22 no 9:271-275 10 My '63.

I. Katedra Dzwignic, Politechnika, Gliwice.

BINKOWSKI, Wladyslaw (Gliwice)

Selection criteria of hoists used in construction work. Przegl  
budowl i mieszk 36 no.12:683-685 D '64.

JASINSKI, Stanislaw, mgr inz.; BINKOWSKI, Wladyslaw, mgr inz., adiunkt

Dynamic stability of cranes. Przegl mech 24 no.4:110-112 25 F  
'65.

1. Deputy Chief Designer, Mechanical Works, Labedy. 2. Department  
of Cranes of the Silesian Technical University, Gliwice.

29

**Use of chromium solutions for a single bath and regeneration of the chromium.** 1. Biska and M. Tomisek. *Tech. Hlady Kadmicki* 21, 62-3(1946); *Chimie & industrie* 38, 176(1947).—The authors attempted to replace part of the Cr with AlCl<sub>3</sub>, but the results were not encouraging. The only way of saving on Cr is to regenerate it from the spent baths. This can be done by pptg. with Na<sub>2</sub>CO<sub>3</sub>, filtering through a filter press, dissolving the Cr hydroxide in H<sub>2</sub>SO<sub>4</sub>, and making alk. with Na<sub>2</sub>CO<sub>3</sub>.  
A. Papineau-Couture

A.S.M. I.S.A. METALLURGICAL LITERATURE CLASSIFICATION

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**BINNIK, B., inzhener-mayor**  
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Preparing sleeve targets for towing by a fighter airplane.  
Vost.Vozd.Fl. 37 no.5:68-72 My '54. (MLRA 8:8)  
(Russia--Air force--Target practice)

Binnyei, I.

30. Development in the designing and construction of pumping plants - I. Binnyei. (Viztany Közlönyek - 1954, No. 4, pp. 423-429, 33 figs.) GR

On the 10 million acres of lowlands requiring drainage in Hungary there are 230 drainage pumps in service with an aggregate capacity of 342 m<sup>3</sup>/sec. Older plants were designed for steam or producer gas drive. Recently electric or diesel drive is applied and the centrifugal pump has been superseded by the axial-flow pump. For the supply of irrigation water the first important pumping plant was built in 1937 at Órady. For pumping water from rivers with a great variation of discharge floating pumping plants of the Gorup type have proved successful. In Hungarian irrigation systems the absence of a head of water must often be compensated by pumps. Since the periods of drainage and of supply of irrigation water rarely coincide in some cases dual-purpose (reversing) pumping plants may be practicable. The pumping plant built near Tiszakécski may be used for drainage

supply of irrigation water and filling up fishponds. The concluding part of the paper sums up the most important experiences gathered in designing and construction during the reviewed 75 years.

BIMOV, A.

Forms of public control. Den.1 kred. 18 no.7:68-70  
J1 '60. (MIRA 13:7)  
(Banks and banking) (Works councils)

BINOV, M. (g.Odessa); KARAS', P. (g.Odessa)

Pioneer orchestra of the housing administration. Zhil.-kom.  
khoz. ll no.7:31 J1 '62. (MIRA 14:7)  
(Odessa--Orchestral music, Juvenile)

BINOV, M. (Odessa); KARAS', P. (Odessa)

Cook Mashen'ka. Obshchestv. pit. no.7:49-50 J1 '62.  
(MIRA 15:10)

(Odessa—Restaurants, lunchrooms, etc.—Employees)

BINOV, M., rabochiy korrespondent (Odessa); KARAS', P., rabochiy korrespondent (Odessa)

With our own hands. Zhil-kom.khoz. 12 no.8:8 Ag '62.

(MIRA 16:2)

(Odessa--Housing management)

LYUBARSKIY, S.V.; BINOV, M.L. (Odessa)

University of culture for nurses. Med. sestra 20 no.11:53-54 N '61.  
(MIRA 15:2)

(NURSES AND NURSING...STUDY AND TEACHING)

KUCHAR, Josef; DEDKOVA, Anna; BINOVA, Tatana, inz.; PROKOP, Ivo

Information on standardization abroad. Normalizace 11 no.1:  
17-22 Ja '63.

BINOVA, Tatana, inz. .

Commerce and standardization. Normalizace ll no.5:156-157  
My '63.

BINOVEC, Frantisek (Praha)

Exhibition of Jan Kutalek. Sklar a keramik 13 no.11: insert  
N°63.

STEPANEK, M.; BINOVEC, J.; CHALUPA, J.; JIRIK, V.; SCHMIDT, P.; ZELINKA, M.

Problems of water blooms in hygiene of water. II Water blooms  
on Czechoslovak reservoirs and ponds. Cesk. hyg. 9 no.4:  
209-215 My'64.

1. Ustav hygieny, Praha.

FISER, K.; BINOVEC, J.; FIKER, S.; ZAHRADNIK, M.

Dermal cleansing agents for workers in industry. J. Hyg. Epidem.,  
Praha 1 no.2:172-178 1957.

1. Institute of Hygiene, Dermatological Clinic of the Medical Faculty  
of Hygiene and the Experimental Division of the Prague Cosmetic  
Factories, Prague.

(DETERGENTS,

dermal cleansing agents for workers in indust.)

(INDUSTRIAL HYGIENE

same)

*J. BINOVEC, J*

CZECHOSLOVAKIA / Chemical Technology. - Safety First Technique. H-6  
Sanitation Technique / Chemical Products and Their  
Application. Part 1.

Abs Jour : Referat. Zhurnal Khimiya, No 4, 1958, 11811.

Author : K. Fiser, J. Binovec, S. Fiker, M. Zahradnik.

Inst : Not given

Title : Detergents for Industrial Workers.

Orig Pub : Pracovni lekar., 1957, 9, No 3, 211 - 213.

Abstract : New detergents (D) containing vaseline oil, glycerin, diethylphthalate, colloid kaolin, condensation products of ethyleneoxide or alcohol, water etc. were studied during production and in a laboratory. The D-s were tried how they wash off lubricating oils, dyes, tar, carbon black for rubbers etc. It was found that the D-s possess a good washing

Card 1/2

CZECHOSLOVAKIA / Chemical Technology. - Safety First Technique.  
Sanitation Technique. Chemical Products and  
Their Application. Part 1.

H-6

Abs Jour : Referat. Zhurnal Khimiya, No 4, 1958, 11811.

Abstract : capacity and irritate the skin less the water with soap.  
The state of the skin of the workers improved already after  
3 months of regular D use.

Card 2/2

BINOVEC, J.; FIKAR, S.; ZEZULKOVA.

Determination of the preserving effect of tetramethylthiuram disulfide in cosmetics. p. 26

PRUMYSL POTRAVIN. (Ministerstvo potratinarskyho prumyslu) Praha, Czechoslovakia  
Vol. 10, no. 1, Jan. 1959

Monthly List of East European Accessions (EEAI), LV, Vol. 8, no. 7, July 1959  
Uncl.

BINOVEC, Jan

Heat insulation of the working holes of the pot melting furnaces.  
Sklar a keramik 12 no.10:308 0 '62.

1. Sklarny Cesky kristal, n.p., Chlum u Trebone.

MACHACEK, Jindrich, inz.; SOUCEK, Jaroslav, inz.; BINOVEC, Vladimir, inz.

Geodetic operations designing new and reconstructed railroads. Geod kart obzor 9 no.12:327-332 D'63.

1. Statni ustav dopravnih projektovani, Praha.

BINOVICH, L.E.

BINOVICH, L.E. Dostizhenia, sovetskogo transporta. Moskva, Transpechat', 1924. 151 p.  
DEC: Unclass.

SO: LC, Soviet Geography, Part I, 1951, Uncl.

N/5  
923  
.B6

BINOVICH, LEONID EDUARDOVICH

NEMETSKO-RUSSKIY, FRAZELOGICHESKIY SLOVAR' (GERMAN-RUSSIAN DICTIONARY OF PHRASES)

MOSKVA, GOS. IZD-VO INOSTRANNYKH I NATSIONALNYKH SLOVAREY, 1956.

904 P.

"LITERATURA": P. (901)-904

923  
923  
876.1  
876.2

N/5  
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4M/6  
N/5

BINOVICH, Ya.Ye., dotsent, kand.tekhn.nauk

Hydraulic transmissions of agricultural tractors. Izv.vys.  
ucheb.zav.; mashinostr. no.3:69-84 '59. (MIRA 13:3)

1. Moskovskiy avtomekhanicheskiy institut.  
(Tractors--Transmissions devices)

BINOVICH, Ya.Ye., kand.tekhn.nauk, dotsent

Hydraulic transmissions of agricultural tractors. Izv.vys.ucheb.  
zav.; mashinostr. no.6:51-61 '60. (MIRA 13:7)

1. Moskovskiy avtomekhanicheskiy institut.  
(Tractors--Transmissions devices)

LAPIDUS, Viktor Iosifovich; PETROV, Vyacheslav Aleksandrovich; BREYGIN, D.B.,  
inzh., retsenzent; BINOVICH, Ya.Ye., kand. tekhn. nauk, red.; NAKHIM-  
SON, V.A., red. izd-va; EL'KIND, V.D., tekhn. red.; CHERNOVA, Z.I., tekhn. red.

[Hydromechanical transmissions for motor vehicles] Gidromekhaniche-  
skie peredachi avtomobilei. Izd.2., perer. i dop. Moskva, Gos.  
nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 494 p.  
(MIRA 14:11)

(Motor vehicles--Transmission devices)

BARSKIY, Igor' Borisovich, prof.; TREPENKOV, I.I., kand. tekhn. nauk, retsenzent; ANOKHIN, V.I., kand. tekhn. nauk, retsenzent; BINOVICH, Ya.Ye., kand. tekhn. nauk, red. [deceased]; YEGORKINA, L.I., red. izd-va; EL'KIND, V.D., tekhn. red.

[Design of tractors] Konstruirovaniye i raschet traktorov.  
Moskva, Mashgiz, 1962. 375 p. (MIRA 15:4)  
(Tractors)

BINSHTOK, F. I.; SMOLYAR, L. I.

Using mathematical methods and electronic calculating machines  
in establishing a production program for multiple-article pro-  
duction. Vest. mashinostr. 42 no.10:74-77 0 '62.  
(MIRA 15:10)

(Industrial management)  
(Economics, Mathematical)  
(Electronic calculating machines)

IVANOV, Nikolay Filippovich; BINSHTOK, Feliks Il'ich; MAKSIMOV, I.S., red.;  
GERASIMOVA, Ye.S., tekhn. red.

[Operational and production planning in a machinery plant] Operativno-  
proizvodstvennoe planirovanie na mashinostroitel'nom predpriatii.  
Moskva, Gos.izd-vo planovo-ekon.lit-ry, 1961. 206 p. (MIRA 14:12)  
(Machinery industry)

BINSHTOK, M. S.

Cand.Med.Sci.

"The Value of Hematology During X-Ray Therapy of Tuberculosis of the Lungs and Larynx," Vest. Oto-rino-laringol., No.3, 1948.

Maj.Med. Service, Yatansk Sanatorium No.1

BINSHTOK, M. S.

Cand. Med. Sci.

"X-Ray Therapy of Laryngo-Pulmonary Tuberculosis," Prob. Tuber., No.3, 1948  
Inst. of Climatotherapy of TB.

*BINSHTOK, M. S.*

BINSHTOK, H. S.

Combined therapy of laryngo-pulmonary tuberculosis. Probl. Tuberk.,  
Moskva No. 6, Nov.-Dec. 50. p. 21-5

1. Of the Institute of Tuberculosis Climatotherapy (Director--  
Candidate Medical Sciences V. F. Chernyshev).

GLML 20, 3, March 1951

BINSHTOK, M.S., kand.med.nauk; GONCHAROV, V.I., kand.med.nauk (Yalta)

Treatment of bronchial asthma in patients with pulmonary tuberculosis on the southern coast of the Crimea. Vrach. delo no.7:135-137 J1'63. (MIRA 16:10)

1. Klinika legochnogo tuberkuleza (zav. - kand.med.nauk V.K. Dargevich) instituta meditsinskoy klimatologii i klimatoterapii imeni I.M.Sechenova.  
(CRIMEA--ASTHMA) (CRIMEA--TUBERCULOSIS)

DINCULESCU, Tr., prof.; BINSTOC, O., dr.; SDIC, L., dr.; DDMITRESCU, St., dr.;  
TELEKI, N., dr.; SLAVESCU, Vl., dr.

Considerations on balneo-physical therapy of vertebral lumbosciatica.  
Med. intern. 14 no.7:865-869 J1 '62!

1. Institutul de Balneologie, Bucuresti.  
(SCIATICA) (LUMBOSACRAL REGION) (BALNEOLOGY)  
(PHYSICAL THERAPY)

BINSTOC, O. dr.; BERLESCU, Elena, dr.; DUMITRESCU, St., dr.

Considerations on the cervicohumeral syndrome. Med. intern. 15  
no.7:839-842 JI '63.

(SPINAL DISEASES) (ARTHRITIS, RHEUMATOID)  
(PERIARTHRITIS) (CERVICAL VERTEBRAE)  
(SHOULDER ARTHROSES) (NEURALGIA)

BINSTOC, O.; SLAVESCU, VI.; MIHAESCU, Rodica.

Research on the action of microwaves on some aspects of the  
dynamics of serum proteins. Stud. cercet. fiziol. 10 no.1:  
97-104 '65.

<sup>G</sup>  
~~BIINTI~~, K.G., Cand Tech Sci--(diss) " Determination of the optim<sup>um</sup>  
number and weight of fractional tests in testing heterogenous <sup>mined</sup> masses  
of minerals." Len, 1958. 19 pp (Min of Higher Education USSR. Len  
Order of Lenin and Order of Labor Red Banner Mining Inst in G.V.Plekha-  
nov. Chair of Enrichment of Minerals), 150 copies (M, 48-58, 104)

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BINTSENTINI, K.M.

27341:      BINTSENTINI, K.M.-Massazh. Fel'dsher i akusherka, 1949, No. 8, s. 50-53.

SO:          Letopis'Zhurnal'nykh Statey, Vol. 47, 1948.

BINTSEYG, M.M., inzh.

Increasing the accuracy of electronic images of parts in  
designing them by means of electronic computers. Mekh. i  
avtom. proizvod. 19 no.5:45-47 My '65. (MIRA 18:11)

BELILOVSKIY, Yefim Solomonovich; BOGUSLAVSKIY, Eduard Yelizarovich;  
BINUS, Mark Semenovich; VOLODIN, Aleksey Pavlovich; KUNIN,  
Iziaslav Kopelovich, SELEKTOR, Spartak Mikhailovich; CHUB,  
Vasiliy Fedoseyevich; YAMKOVY, Grigoriy Tikhonovich; DMITRIYEV,  
A.P., otv. red.; KOVAL', I.V., red. izd-va; MAKSIMOVA, V.V., tekhn. red.

[Improvement of underground mining methods and equipment in the  
Krivoy Rog Basin] Sovershenstvovanie tekhniki i tekhnologii pod-  
zemnoi dobychi rudy v Krivorozhskom basseine. [By] E.S. Belilov-  
skii i dr. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu  
delu, 1961. 238 p. (MIRA 15:3)

(Krivoy Rog Basin--Iron mines and mining)  
(Automatic control)

BINUS, M.S., gornyy inzh.; MIKHEL'SON, M.L., gornyy inzh.

Remote control of sprinklers. Gor.zhur. no.2:73 F '61.

(MIRA 14:4)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog.  
(Remote control) (Sprinklers)

BINUS, M.S., gornyy inzh.; KORCHAK, A.I., gornyy inzh.; MASLOV, V.N.,  
gornyy inzh.

Automation of loading in railroad bunker shafts. Gor. zhur.  
no.4:52-54 Ap '61. (MIRA 14:4)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog.  
(Automatic control) (Ore handling)  
(Mine haulage)

BINUS, M.S.; POTOROCHA, G.T.

The RKSP-2 level indicator. Biul.tekh.-ekon.inform. no.5:6-8 '61.  
(MIRA 14:6)

(Level indicators)

BINUS, M.S.

Automatic loading of railroad bunkers. Sbor. nauch. trud.  
NIGRI no.7:29-33 '60. (MIRA 14:12)  
(Krivoy Rog Basin—Ore handling)  
(Automatic control)

BINUS, M.S., inzh.; KHODOS, V.V., inzh.

Remote control of the operation of mine section substations.  
Gor. zhur. no.8:57-58 Ag '64. (MIRA 17:10)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog.

BINUS, M.S., gornyy inzh.; YAROSHENKO, N.P., gornyy inzh.

Automation of the operation of a converter-type substation at the  
"Artem-I" mine. Gor.zhur. no.3:56-57 Mr '65. (MIRA 18'5)

1. Nauchno-issledovatel'skiy gornorudnyy institut (for Binus).
2. Rudnik im. Kirova, Krivoy Rog (for Yaroshenko).

Country : USSR  
Category : Human and Animal Physiology. T  
Effects of Physical Factors. Ionizing Radiation.  
Abs. Jour. : Ref Zhur-Biol., No 23, 1958, 106887  
Author : Ginzburg, M. B.; Pandre, Ye. M.; Bims, N. M.  
Institut. : -  
Title : The Role of Sulphydrylic Groups and Peroxide  
Compounds in the Mechanism of the Biological Effect  
of Ionizing Radiation.  
Orig Pub. : Biokhimiya, 1957, 22, No 3, 467-475  
Abstract : Rats were subjected to X-ray irradiations of  
lethal 800-1200 r doses. After 24 hours, the  
amount of ascorbic acid (I) decreased in the  
spleen by 30 percent; but it remained unchanged  
in the liver and in the kidneys. In the pre-  
sence of peroxidase, the content of I decreased  
considerably. The maximal reduction of the I  
content occurred 2 days after irradiation. With-  
in the first 24 hours after irradiation, a de-  
crease of dehydrogenase activity of liver,

Country : USSR  
Category : Human and Animal Physiology. Effects of Physical  
Factors, Ionizing Radiation.  
Abs. Jour : Ref. Zhur.-Biol., No 23, 1958, 106887  
Author :  
Institut. :  
Title :  
Orig Pub. :  
Abstract : nase poisons of some tissues became sharply in-  
Cont'd creased in irradiated rats. Under the influence  
of irradiation, peroxide compounds form in tis-  
sues and the reaction properties of the ferments  
of SH groups are enhanced. -- R. S. Krivchenkova

Card:

SOV/127-59-3-2/22

Experience in the Automation of Production Processes in Mines of the Krivoy Rog Basin.

Novaya Mine) cut down the loading time and labor force. The 10 kw double-drum shunting winches are modified LA-10 scraper winches, constructed at the "Kommunist" Plant (3,000 kg-forces traction, remotely controlled with the help of a reversible magnetic starter). The 20 kw single-drum shunting winches are used for shifting freight cars under the bunkers. Their traction is 7,000 kg-forces. They are also remotely controlled. Automated curtain type fan doors, developed by NIGRI are now being introduced in mines of the Basin. For the automated exchange of trolleys in hoisting cages, different composite mechanisms developed by NIGRI, are being introduced. The automatic setting gear APU-NIGRI consists of an electromagnet linked by traction with a lever fixed on the camshaft. Two adjuster rings, connected by a wedge with the camshaft, transmit by the lever the pressure of the cage on the

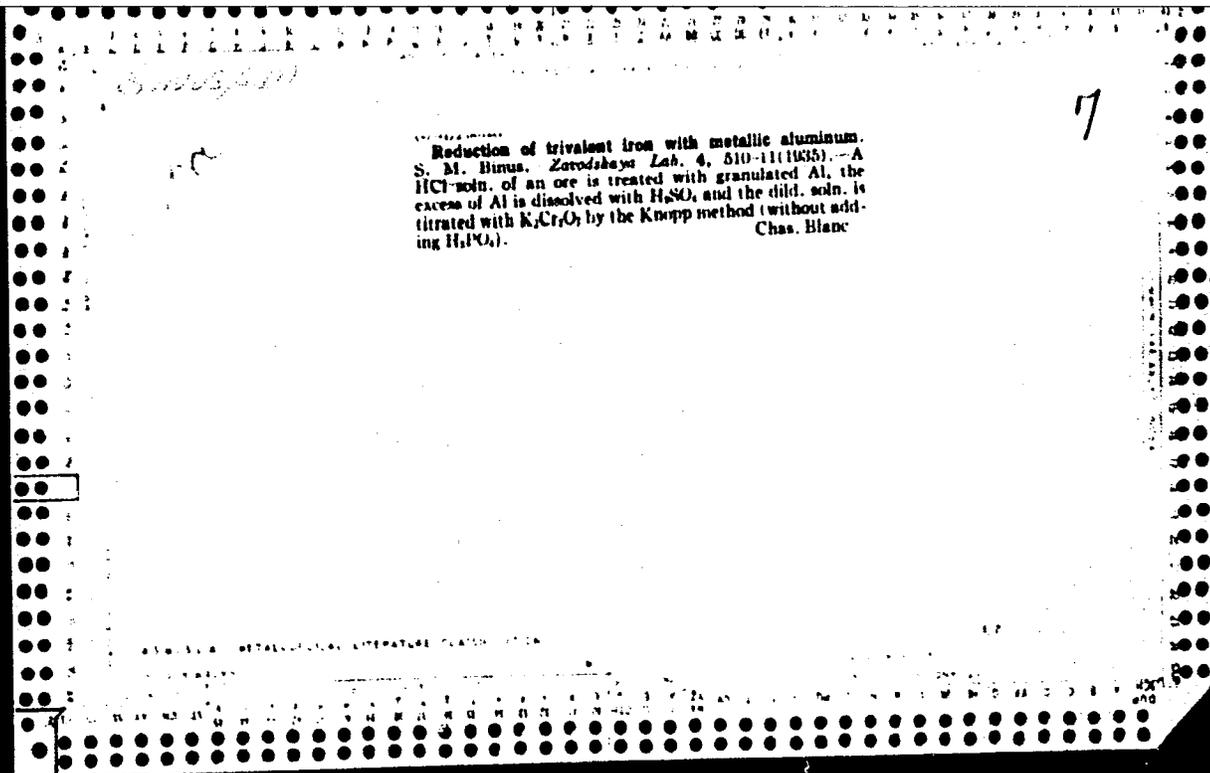
Card 2/ 5

SOV/127-59-3-2/22

**Experience in the Automation of Production Processes in Mines of the Krivoy Rog Basin.**

XX Parts"yezd. was automated in 1955, and that of the Mine Administration imeni Ordzhonikidze - in 1958. The experience gathered in the exploitation of these installations will avoid initial mistakes while erecting the new automated compressor installation at the Mine Administration imeni Karl Libknecht. The author states that many problems connected with the automation of these installations were not solved by the constructors, and manual work is still needed in auxilliary operations. The automated loading of ore into railway bunkers is done by conveyers which carry ore from the crushing and sorting plant. The conveyer is put into motion by a motor, or by shunting winches. In 1956, NIGRI automated the loading of a series of bunkers at the crushing plant of the Gigant Mine. The level of ore in bunkers is controlled by two electrode indicators connected with the electromagnetic

Card 4/5



BINUS, Ye. M.

"Condition of the Auxiliary and Motor System in Young Children," Vop. Ped.  
i Okhran. Mater. i Det., 17, No.4, 1949

Sci.Res.Inst. im. G.I.Turner

SOV/137-58-11-23376

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 219 (USSR)

AUTHORS: Binusova, N. A., Braynin, I. Ye., Shkuratov, F. I.

TITLE: The Effect of Temperatures of Quenching and Preliminary Stabilization on Tempering Processes in 9KhS Steel (Vliyaniye temperatury zakalki i predvaritel'noy stabilizatsii na protsessy otpuska stali 9KhS)

PERIODICAL: Sb. nauchn. rabot stud. Donetsk. industr. in-t, 1957, Nr 2, pp 93-100

ABSTRACT: Dilatometric methods were employed in investigating the effect of the temperature of quenching and preliminary stabilization (tempering) on the position of temperature lags in transformations occurring during annealing of 9KhS steel. The specimens were quenched in oil from temperatures of 780, 860, and 920°C; tempering operations were performed in conjunction with continuous heating of specimens to 600° as well as in conjunction with preliminary "stabilization" at 150, 260, and 300°. Whereas the temperature corresponding to the termination of the first stage of tempering increases by an insignificant amount, the temperature of the beginning of martensite decomposition increases with increasing quench temperatures. The second transformation point is

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SOV/137-58-11-23376

The Effect of Temperatures of Quenching (cont.)

also displaced by tempering. This condition is attributable to an increase in the degree of alloying of martensite and retained austenite (RA). Reheating of quenched specimens which have been tempered for two hours at 150° displaces the temperature of the beginning of decomposition of the RA toward the region of lower temperatures. This may be explained by a reduction of stresses, a decrease in the degree of alloying of martensite, and a reduction of its tetragonal characteristics during the first tempering. A preliminary three-hour tempering at 260-300° is not sufficient to produce complete decomposition of the RA. A second heating, however, brings about the decomposition of the RA at a temperature <300°.

M. Sh.

Card 2/2

L 02321-67  
ACC NR: AR6023339 (A, N) SOURCE CODE: UR/0299/66/000/003/M032/M033

AUTHOR: Brodskiy, A. F.; Binyashevskiy, E. V.; Kozlova, D. A. 18  
22 B

TITLE: Comparative evaluation of experimental wound healing under homoplastic skin transplants and under biologic film

SOURCE: Ref zh. Biol, Part II, Abs. 3M200

REF SOURCE: Sb. Aktual'n. vopr. kliniki i lecheniya ortopedo-travmatol. bol'nykh. Kiyev, Zdorov'ya, 1965, 199-203

TOPIC TAGS: rodent, wound, tissue transplant, skin physiology

ABSTRACT: In 120 guinea pigs three sections of skin in circular shapes (2 cm. in diameter) were cut from the animal's back. A biological film (prepared from animal or human skin) was applied to the first wound and a homotransplant of fresh skin was applied to the second wound; the third wound was left free to heal under a scab. Two wounds were inflicted on control animals which healed under similar conditions--- under a scab and under a biological film. Healing of wounds under a biological film is accompanied by formation of delicate painless scars in which correctly oriented gelatin giving fibers are found. Disorderly growth of connective tissue fibrous elements was found in wounds under

Card 1/2 UDC: 591.169+577.99

L. 02321-67

ACC NR: AR6023339

fresh skin, and also the appearance of complex nerve formations of the micronerve type. Scars of wounds healing under a scab did not differ from the scars forming under fresh skin, with the exception of the nerve formations which resembled those formed under a biological film. Disturbed protein metabolism was noted in all cases of healing. Protein metabolism was restored in 1 mo in wounds healing under a biological film; protein metabolism was restored later in the other cases. N. S.  
Translation of abstract.

SUB CODE: 06

Card 2/2

vmb

STOICHITA, S., dr.; BIOCESCU, Lidia, dr.; CONSTANTINESCU, Monica, dr.;  
STECLACI, A.; DOMOCOS, A.

Significance of gastroscopy in verification of the diagnosis of  
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1. Lucrare efectuata in Clinica a V-a medicala, Centru de gastro-  
enterologie, Bucuresti (director: prof. I. Spirchez).

ARSIC, Bogoljub, sanitetski potpukovnik, dr.; BIRTASEVIC, Bozidar, sanitetski major, dr.; PETKOVIC, Branko, sanitetski potpukovnik, dr.; BIOCINA, Josip, sanitetski potpukovnik, dr.; PAUNOVIC, Sinisa, sanitetski kapetan, dr.

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1. Vojnomedicinska akademija u Beogradu, Epidemioloski institut.  
(RHEUMATIC FEVER)

S

BIOL, H. Iysek, ustav fakulty PU v Olomouci, Fierlingerova 10.

Role of soil and vegetables in epidemiology of geo-helminthiases.  
Cesk. epidem. mikrob. imun 8 no.2:137-140 Mar 59.

(HELMINTHS,

eggs on vegetables from manure fertilized soils (Cs))

(VEGETABLES,

helminth eggs on vegetables from manure fertilized soils  
(Cs))

(SOIL, microbiology,

same)

(FERTILIZERS,

same)

BIOLCHEV, A.

" On the Construction of Barrages," p. 136.  
(Gordko Stapanava, Vol.8, No.3, Mar. 1952, Sofiya.)

SO: Monthly List of <sup>East European</sup> ~~Russian~~ <sup>Vol. 2, No. 9</sup> Accessions, Library of Congress, September 1953, Uncl.

BIOLCHEV, R.

"Weight by volume of torrential rains."

Gorsko Stopanstvo, Sofiya, Vol. 10, No 6, 1954, p. 266

SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress

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"Poplar Trees", P. 408. (GORSKO STOPANSTVO, Vol. 10, No. 9, Nov. 1954,  
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SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4,  
No. 6, June 1955, Uncl.

BIOLCHEV, A. - Gorsko Stopanstvo

Location of forest belts for regulation water to prevent erosion in mountain reservoirs.

P. 447

(GORSKO STOPANSTVO Vol. 10. No. 10, Dec. 1954)

SO: Monthly list of East European Acession, (KEAL), LC, Vol. 4, No. 9, Sept. 1955, Uncl.

BIOLCHEV, A.

Anti-erosion measures in water reservoirs. p. 1.  
TEKHNIKA, Sofiya, Vol. 4, no. 4, Apr./May 1955

SU: Monthly List of East European Accessions, (EEAL), LC, Vol. 5, No. 6 June 1956,  
Uncl.

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Vol. 4, 1956.  
NAUCHNI TRUDOVE.  
AGRICULTURE  
Sofia, Bulgaria

So: East European Accession, Vol. 6, No. 3, March 1957

BICLCHEV, A.; PIMPIREV, P.

BICLCHEV, A.; PIMPIREV, P. Soil-protecting properties of *Ailanthus glandulosa*.  
p. 101.

Vol. 4, 1956.  
NAUCHNI TRULOVE.  
AGRICULTURE  
Sofia, Bulgaria

So: East European Accession, Vol. 6, No. 3, March 1957

BULGARIA / Soil Science. Tillage. Reclamation. EROSION.

Abs Jour: Ref Zhur-Biol., No 2, 1959, 6117.

Author : Biolchev, Asen.

Inst : ~~Not given.~~

Title : Fundamental Problems of Soil Erosion in Bulgaria.

Orig Pub: Selskostop. mis"l, 1958, 3, No 4, 241-250.

Abstract: No abstract.

Card 1/1

END

# 1471

48

BIOLCHEV, A.

Forest vegetation in the struggle against soil erosion. p. 112.  
(GORSKO STOPANSTVO, Vol. 13, no. 3, Mar. 1957, Sofia, Bulgaria.)

SO: Monthly List of East European Accessions (EELA) LC, Vol. 6, no. 12, December 1957 Uncl.

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Development of the process of linear erosion. Izv Inst  
"Nikola Pushkarov" no.5:73-99 '62.

1. Chlen na Redaktsionnata kolegiia, "Izvestiia na  
Nauchnoisledovatelския institut po pochvoznanie i  
agrotehnika "N. Pushkarov" (for Biolchev).

BIOLCHEV, As., prof. d-r; GALEVA, V., d-r; PALAVEEV, T., d-r; RAIKOV, L.

Prof. TSvetan Staikov, Corresponding Member of the Bulgarian Academy of Agricultural Sciences, is sixty. Izv. Inst "Nikola Pushkarov" 7:5-6 '63.

1. Chlenovi na Redaktsionnata kolegia, "Izvestia na Instituta za pochvoznanie i agrotehnika 'Nikola Pushkarov'".

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B.R., G.L.

24(4) PHASE I BOOK REPRODUCTION SOV/3140

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trudy pervogo vsesoyuznogo soyuzhchaniya po fotoelektricheskim  
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noyabrya 1957 g (Photoelectric and Optical Phenomena in Semi-  
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and Optical Phenomena in Semiconductors...) Kiyev, 1959. 403 p.  
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Ed. of Publishing House: I. V. Kisina; Tech. Ed.: A. A. Matveychuk;  
Resp. Ed.: V. Ye. Lashkarov, Academician, Ukrainian SSR, Academy  
of Sciences.

PURPOSE: This book is intended for scientists in the field of semi-  
conductor physics, solid state spectroscopy, and semiconductor  
devices. The collection will be useful to advanced students in  
universities and institutes of higher technical training  
specializing in the physics and technical application of semi-  
conductors.

COVERS: The collection contains reports and information bulletins  
(the latter are indicated by asterisks read at the First All-  
Union Conference on Optical and Photoelectric Phenomena in Semi-  
conductors. A wide scope of problems in semiconductor physics  
and technology are considered: photoconductivity, photoelectro-  
motive forces, optical properties, photoelectric cells and  
photoresistors, the actions of hard and corpuscular radiations,  
the properties of thin films and complex semiconductor systems,  
etc. The materials were prepared for publication by E. I. M. K.  
Rushboy, O. V. Shitko, K. B. Tolpygo, M. Labenok, and  
Bryzhanov. References and discussion follow each article.

Photoelectric and Optical Phenomena (Cont.) SOV/3140

Bliz, G. I. The Effect of Surface Recombination on the Photo- conductivity of a Semiconductor (Theses)	136
Buzalskiy, V. M., and M. F. Dyzen. Absorption of Light by an Impurity in Crystals of the Germanium Type	138
Mashovits, T. K. Investigation of the Recombination Process in Thermal Centers in Germanium	138
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Iskityan, M. I. Improvement of the Photoelectric Method of Measuring the Length of Diffusion Displacement of Nonequilibrium Carriers in Semiconductors (Theses)	148

4. Other Semiconductors  
Card 7/16

BIR, G.L.

Effect of surface recombination on photoconductivity in semi-  
conductors. Fiz.tver.tela 1 no.1:67-76 Ja '59.

(MIRA 12:4)

(Semiconductors)

(Photoconductivity)

PIKUS, G.Ye.; ~~BIR, G.I.~~

Effect of deformation on the energy spectrum and electric properties of germanium and silicon with holes. Fiz.tver.tela 1 no.1: 154-156 Ja '59. (MIRA 12:4)

(Germanium--Electric properties)

(Silicon--Electric properties)

(Deformations (Mechanics))

66267

~~24(3)~~ 24,7700

SOV/181-1-11-2/27

AUTHORS: Pikus, G. Ye., Bir, G. L.

TITLE: The Influence of a Deformation on the Energy Spectrum of the Holes in Germanium and Silicon

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 11, pp 1642-1658 (USSR)

ABSTRACT: One of the possibilities of investigating the zone structure of semiconductors is the investigation of the electric properties of deformed semiconductors. First, the authors give an introductory discussion of some of the papers already published on this subject, especially those by Smith (Ref 1) and Adams (Ref 5) concerning the piezoelectric resistance in n- and p-type germanium and silicon. The theory of these effects has been worked out in detail for n-germanium, while the effects of deformation on the electric properties of p-germanium have not been investigated in detail theoretically - apart from a short communication by Adams concerning the changes in the hole spectrum of a deformed crystal, which are also described briefly. In the present paper the authors carry out a more detailed theoretical investigation of the effect deformations have on the various electric properties of semiconductors with the aim of obtaining more detailed knowledge of the zone struc-

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SOV/181-1-11-2/27

## The Influence of a Deformation on the Energy Spectrum of the Holes in Germanium and Silicon

ture and  $\epsilon$ -parameter and the mechanism of carrier scattering. An expression is derived for the hole spectrum in deformed germanium and silicon. The energy limits are calculated from the general formula. One of these limits, valid at a sufficiently great distance from the boundary of the zone, agrees with the expression obtained by Adams apart from a numerical factor in one of the terms. It follows from the formulas derived that while the effect of the piezoelectric resistance is comparatively small and proportional to the deformation at high temperatures, the deformed crystals exhibit a marked anisotropy of their electric properties at sufficiently low temperatures. In general, the degree of anisotropy depends not on the degree of deformation, but only on its direction. At the beginning of the paper, which is divided into three parts, a mathematical analysis is given of the valence zone in a deformed lattice. An expression is derived for the energy of the holes at the space point  $k$   $E(\vec{k}, \epsilon)$ . Then, the special cases of low and high temperatures are investigated, and the formulas obtained are evaluated numerically (Table 2). The course of the functions  $E(k)$  for

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66267

SOV/181-1-11-2/27

The Influence of a Deformation on the Energy Spectrum of the Holes in Germanium and Silicon

unilateral deformation and shearing deformation is illustrated in the figures 1 and 2. In an appendix, the authors calculate  $E(\epsilon, \mathbf{k})$  with exact allowance for spin-orbit interaction. The authors thank A. I. Ansel'm for reading of proof and for valuable remarks. There are 2 figures, 2 tables, and 14 references, 2 of which are Soviet.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad  
(Institute for Semiconductors AS USSR, Leningrad)

SUBMITTED: December 2, 1958

Card 3/3

PIKUS, G. Ye.; BIR, G.L.

Effect of deformation on the electrical properties of p-type  
germanium and silicon. Fiz.tver.tela 1 no.12:1828-1840 D  
159.

(MIRA 13:5)

1. Institut poluprovodnikov AN SSSR, Leningrad.  
(Germanium--Electric properties)  
(Silicon--Electric properties)

84090  
S/181/60/002/009/033/036  
B004/B056

9,4300 (1035, 1138, 1143)

AUTHORS: Bir, G. L., Pikus, G. Ye.

TITLE: The Theory of the Deformation Potential for Semiconductors  
With Complex Band Structure

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2287-2300

TEXT: In the introduction, the authors discuss the advantages of the deformation potential method suggested in 1950 by J. Bardeen and W. Shockle (Ref. 1), as well as by S. I. Pekar and M. F. Deygen (Ref. 2). In the present paper, they derive the operator for the interaction of the electron with long-wave phonons for the case of an arbitrary degeneracy of the bands, employing the method developed by I. M. Luttinger and W. Kohn (Ref. 4). Here, the matrix expressing the interaction between the electron and acoustic oscillations is identical with the matrix determining the change in the energy of the carriers in uniform deformation and which had been derived by the authors in Ref. 5. Furthermore, the method of deformation potentials is used for describing the interaction between electron and long-wave optical oscillations. In this case, the constants

Card 1/2

The Theory of the Deformation Potential for  
Semiconductors With Complex Band Structure

84090  
S/181/60/002/009/033/036  
B004/B056

of the theory cannot be determined immediately from the data of the piezoelectric resistance. The influence of spin-orbit interaction is discussed. The results obtained are used for calculating the transition probabilities for holes in germanium and silicon. Precise expressions for the transition probability in scattering on lattice vibrations are obtained. These results are intended to be used for developing a theory of galvanomagnetic effects in p-type germanium. The authors thank A. I. Ansel'm and S. I. Pekar for perusing the manuscript and for discussions. There are 8 references: 4 Soviet and 4 US. ✓

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors of the AS USSR, Leningrad)

SUBMITTED: February 23, 1960

Card 2/2

BIR, G. L.

Cand Phys-Math Sci - (diss) "Effect of deformation on the energy spectrum, and electrical properties of semiconductor and theory of deformational potential for semiconductors containing degenerate zones." Leningrad, 1961. 11 pp; (Leningrad Order of Lenin State Univ imeni A. A. Zhdanov); 180 copies; price not given; bibliography on pp 10-11 (12 entries); (KL, 10-61 sup, 204)

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S/181/61/003/003/030/030  
B102/B205

9,4300 (1055, 1143, 1137)

AUTHORS: Pikus, G. Ye. and Bir, G. L.

TITLE: Cyclotron and paramagnetic resonance in deformed crystals

PERIODICAL: Fizika tverdogo tela, v. 3, no. 3, 1961, 1001-1004

TEXT: This is the continuation of two earlier papers, in which the authors described the effect of deformation on the energy spectrum of holes in germanium-type lattices. It was shown that the isoenergetic surfaces near the extremum in the deformed crystals are ellipsoids, and that the effective masses depend largely on the direction of deformation and determine three constants (A, B, D), such as the spectrum in an undeformed crystal. These constants were determined in Ref. 3 with high accuracy. From Refs. 3-5 (see below) it may be seen that significant data on band structure and impurity centers can be obtained by a study of resonance effects on deformed crystals. In this connection, a theoretical study has been made of some new possibilities of determining the cyclotron and paramagnetic resonance of deformed crystals. Measurement of the cyclotron resonance of deformed p-type Ge or Si permits the determination of A, B, and D, as well as of

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B102/B205

Cyclotron and ...

holds for such deformations in which the band splitting equal to  $2\sqrt{\mathcal{E}}$  exceeds both  $kT$  and  $E(0) - E(\vec{k})_{\min}$ . For deformations in the directions  $[001]$  and

$[111]$  one obtains 
$$b_{\mathcal{E}} > 0 \quad E_{1,2}(\mathbf{k}) = \left(A + \frac{B}{2}\right)(k_1 \pm k_1)^2 + (A - B)k_2^2 \quad (3)$$

$$b_{\mathcal{E}} < 0 \quad E_{1,2}(\mathbf{k}) = \left(A - \frac{B}{2}\right)(k_1 \pm k_1)^2 + (A + B)k_2^2 \quad (4)$$

где  $k_1^2 = k_x^2 + k_y^2$ , а  $k_{1,2} = \frac{\sqrt{3}}{2} \frac{|\mathcal{E}|}{A \pm \frac{B}{2}}$ , соответственно.

$$d_{\mathcal{E}} > 0 \quad E_{1,2}(\mathbf{k}) = \left(A + \frac{D}{2\sqrt{3}}\right)(k_1 \pm k_1)^2 + \left(A - \frac{D}{\sqrt{3}}\right)k_2^2 \quad (5)$$

$$k_{1,2} = \frac{|\mathcal{E}|}{A + \frac{D}{2\sqrt{3}}}$$

$$d_{\mathcal{E}} < 0 \quad E_{1,2}(\mathbf{k}) = \left(A - \frac{D}{2\sqrt{3}}\right)k_1^2 + \left(A + \frac{D}{\sqrt{3}}\right)(k_2 \pm k_2)^2 \quad (6)$$

$$k_2 = \sqrt{2} \frac{|\mathcal{E}|}{\left(A + \frac{D}{\sqrt{3}}\right)}$$

Card 3/6

Cyclotron and ...

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B102/B205

The isoenergetic surfaces in InSb on deformation along  $[100]$  and  $[111]$  are toroidal for  $d\epsilon > 0$ ; the extremum lies on a ring with  $k_{\parallel} = k_{\perp 0}$ .

Semiconductors of this type have not yet been discovered. E. I. Rashba (FTT, 2, 162, 1959) has made an exact theoretical study of semiconductors with such a spectrum and predicted combined resonance for them. Using formulas from Ref. 2, a study of the spin resonance on p-type Ge and Si leads to

$$(\hbar\omega_n)^2 = \frac{\hbar_0^2 k^2}{\epsilon_s} \langle H, H \rangle, \quad (7)$$

$$\langle A, B \rangle = \sum_{ij} \beta_{ij} A_i B_j, \quad (8)$$

$$\beta_{zz} = [\sqrt{\epsilon_s} + b(\Delta - 3\epsilon_{zz})]^2 + 3d^2(\epsilon_{xy}^2 + \epsilon_{zz}^2),$$

$$\beta_{xy} = \sqrt{3}d(\sqrt{3}d\epsilon_{zz}\epsilon_{xy} - \epsilon_{xy}[2\sqrt{\epsilon_s} - b(\Delta - 3\epsilon_{zz})])$$

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$$\Delta = \epsilon_{zz} + \epsilon_{yy} + \epsilon_{xx}$$

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S/181/61/003/003/030/030  
B102/B205

Cyclotron and ...

For deformations along [001] or [111] one obtains

$$(\hbar\omega_n)^2 = \mu^2 c^2 (g_{||}^2 H_z^2 + g_{\perp}^2 H_{\perp}^2), \tag{9}$$

$$g_{||}^2 = (1 \mp 2)^2, \quad g_{\perp}^2 = (1 \pm 1)^2, \quad H_{\perp}^2 = H_x^2 + H_y^2,$$

(upper sign:  $b\varepsilon > 0$  or  $d\varepsilon > 0$ ; lower sign:  $b\varepsilon < 0$  or  $d\varepsilon < 0$ ). Measurement of this resonance (resonance frequency  $\omega_n$ ) makes it possible to determine  $b$  and  $d$  and, thus,  $B$ , and  $D$ .  $b/d$  can be determined from measurements of resonance in the case of other directions of deformation. These formulas are valid only, for such holes, for which  $E(\vec{k}) \ll \Delta E = 2\sqrt{\varepsilon}$ .  $\omega_n$  depends not only on  $b$  and  $d$  but also on the form of the wave function of the impurity center. For slight deformations,  $\Delta\omega_n/\omega_n \approx 2\sqrt{\varepsilon}/E_1$ , where  $E_1$  is the activation energy of the impurity center. There are 14 references: 6 Soviet-bloc and 7 non-Soviet-bloc. The references to English-language publications read as

Card 5/6

29691

S/181/61/003/010/016/036

B111/B138

247700 (1164,1385,1559)

AUTHORS: Bir, G. L., and Pikus, G. Ye.

TITLE: Effect of deformation on the energy spectrum and electrical properties of InSb-type semiconductors

PERIODICAL: Fizika tverdogo tela, v. 3, no. 10, 1961, 3050-3069

TEXT: The authors studied the effect of deformation on the electrical properties, and particularly on the carrier energy spectra of p-type and n-type InSb and of n-type GaAs at low and high temperatures. The energy band degeneracy, which occurs in the k-space in crystals of high symmetry, is eliminated by deformation. Resistivity and other thermal and galvanomagnetic factors are greatly changed as a result. The InSb valency band has three-fold degeneracy at  $\vec{k} = 0$ . The conduction band at  $\vec{k} = 0$  is only degenerate in respect of spin. Interaction between this s-band and the valency p-band is very considerable, due to the small width of the forbidden band. The study made for n- and p-type InSb only concerns effects arising at low temperatures. Instead of the

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29691 S/181/61/003/010/016/036  
B111/B138

Effect of deformation on the ...

perturbation theory, a more general method developed by G. Ye. Pikus (Ref. 11: ZhETF, 41, no. 4(10), 1961; Ref. 12: ZhETF, 41, no. 5(11), 1961) was used for the calculation. Many formulas are taken from these two papers and also from Ref. 6 (G. Ye. Pikus, G. L. Bir. FTT, 1, 139, 1959; 1, 1642, 1959). (1) Valency band: The following holds for the Hamilton operator  $\hat{\mathcal{H}}$ :

$$\begin{aligned} \hat{\mathcal{H}} = & B_1 k^2 + B_2 \sum_i J_i^2 k_i^2 + B_3 \sum_{i,j} [J_i J_j] k_i k_j + \alpha_1 \sum_i k_i V_i + \\ & + C_1 \epsilon + C_2 \sum_i J_i^2 \epsilon_{ii} + C_3 \sum_{i,j} [J_i J_j] \epsilon_{ij} + C_4 \sum_i J_i k_i (\epsilon_{i+1, i+1} - \epsilon_{i+2, i+2}) + \\ & + C_5 \sum_i J_i (\epsilon_{i, i+1} k_{i+1} - \epsilon_{i, i+2} k_{i+2}), \end{aligned} \quad (1)$$

where  $2[J_i J_j] = J_i J_j + J_j J_i$ ,  $2|J_i J_j| = J_i J_j - J_j J_i$ ,  $V_i = [J_i(J_i^2 - J_i^2)]$ ,  $\epsilon = \text{Sp} \hat{\epsilon}$ , where  $i = x, y, z$ ;  $i + 3 = i$ . Only the first three terms were considered in case of p-type germanium.  $B_1, C_1$  are of zeroth order in

$\beta^2 (\beta = \bar{v}/c)$ ;  $\alpha_1$ , a very small quantity, is of first order in  $\beta^2$ . In general, only those terms are considered in  $\hat{\mathcal{H}}$  which are linear in  $\vec{k}$  and Card 2/6

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of zeroth order in  $\beta^2$ . The authors restrict themselves to the case of not very large deformations for which:  $\beta = \beta_0 + \beta_1$ .  $\beta_0$  is calculated by Eq. (13) from Ref. 6. The matrix is indicated for  $\beta_1$ . The eigenvalues of  $\beta_0$  have two-fold degeneracy. At low temperatures, deformation in the  $[100]$  and  $[111]$  directions is discussed in particular. Similar formulas are given for high temperatures. In deformation, the temperature dependence of resistivity of p-type InSb has the form  $\alpha + \beta/T$ . This deviation from theory can be attributed to the presence of several scattering mechanisms; not so, however, the high value of  $\alpha$ . The constants  $b$  and  $d$  taken over from Ref. 6 are estimated by using data from Ref. 4 (R. F. Potter, Phys. Rev., 108, 3, 652, 1957) and Ref. 5 (A. Tuzzolino, Phys. Rev., 109, 6, 1958). Characteristically,  $b$  is smaller than  $d$  by about one order of magnitude, and both constants are negative.

(2) Conduction band: At low energies interaction between s- and valency p-band leads to a marked deviation from the dispersion law, causing the magnetic moment of electrons to be highly dependant on their energy. On deformation this interaction must cause a considerable change in effective mass and the deformation potential constants.

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